

Serial No. 09/713,929

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of : July 23, 2007
Hideki Tai, et al : Group Art No.: 2145
Serial No. 09/713,929 : Examiner: Tanim Hossain
Filed: November 16, 2000 : for IBM Corporation
Anne Vachon Dougherty
Title: APPARATUS AND METHOD 3173 Cedar Road
FOR MANAGING MOBILE AGENTS Yorktown Heights, NY 10598

Board of Patent Appeals and Interferences
Alexandria, VA 22313-1450

SUPPLEMENTAL APPEAL BRIEF (37 CFR 41.37)

Appellants hereby appeal to the Board of Patent Appeals and Interferences from the decision dated January 3, 2006 of the Examiner finally rejecting Claims 1, 3-6 and 8-9 in the above-identified patent application, and respectfully request that the Board of Patent Appeals and Interferences consider the arguments presented herein and reverse the Examiner's rejection.

I. REAL PARTY IN INTEREST

The appeal is made on behalf of Assignee, International Business Machines Corporation, who is a real party in interest with respect to the subject patent application.

II. RELATED APPEALS AND INTERFERENCES

There are no pending related appeals or interferences with respect to the subject patent application.

III. STATUS OF CLAIMS

There are seven (7) claims pending in the subject patent application, numbered 1, 3-6, and 8-9. No claims stand allowed. A prior Appeal was filed on February 7, 2005 with an Appeal Brief filed on May 7, 2005; whereupon prosecution was reopened on June 29, 2005. A complete copy of the claims involved in the appeal is attached hereto.

IV. STATUS OF AMENDMENTS

There are no unentered amendments filed after final rejection for the application.

V. SUMMARY OF INVENTION

The invention which is the subject of the remaining pending claims is a mobile agent management apparatus and method. Independent Claims 1 and 6 recite the apparatus and method.

Independent Claim 1

As set forth in independent Claim 1, the invention is a mobile agent management apparatus comprising a plurality of agent servers (page 2, line 19, 1242 and 1244 of Fig. 12); and a registration server (page 2, lines 19-20 and 1245 of Fig. 12) for maintaining location information of mobile agents, wherein each of the plurality of agent servers

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comprises means (1246 of Fig. 12) for maintaining a history of movement of each of said mobile agents (page 2, lines 21-22) including a counter for accumulating a count of the accumulated number of movements for each of said mobile agents (page 3, lines 6-7); and request means (1247 of Fig. 12) for periodically generating requests for updating location information of each of said agents (page 3, lines 5-6), said requests including at least a mobile agent identifier and said accumulated number of movements for said mobile agent, to renew location information at said registration server (page 3, lines 9-10).

Independent Claim 6

As set forth in independent method Claim 6, the method comprises steps of, on each of the agent servers, maintaining history of movement of each of the mobile agents (page 12, lines 9-10) including accumulating a count of the number of movements for each of the mobile agents (page 14, line 18); and periodically generating requests (Figs. 23 and 24) for updating and deleting registries, said requests including at least a mobile agent identifier and said count of the accumulated number of movements for said mobile agent (page 8, lines 13 and 18); and at said registration server

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(Fig. 26), renewing location information of each of said mobile agents kept by said registration server with said requests (page 8, line 24-page 9, line 1).

Dependent Claims 3, 4, 8 and 9

Claims 3 and 8 recite comparing the count of the accumulated number of movements to a threshold number of movements (page 12, lines 9-17; page 13, lines 2-10; Request Sending Buffer of Fig. 13). Claims 4 and 9 further recite that the agent servers generate a request for updating location information to the registration server when the count exceeds a predetermined threshold (page 13, lines 2-10, Fig. 13).

VI. GROUND OF REJECTION TO BE REVIEWED

The grounds of rejection in the Final Office Action included the following:

-Claims 1 and 6 have been rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,668,249 of Kase

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(hereinafter "Kase" in view of U.S. Patent publication 2001/0022558 of Karr, et al (hereinafter "Karr"); and
-Claims 3-5, 8 and 9 have been rejected under 35 USC 103(a) as being unpatentable over Kase and Karr in view of U.S. Patent 5,943,621 of Ho (hereinafter "Ho").

VII. ARGUMENT

Claims 1 and 6

35 USC 103(a) as unpatentable over Kase in view of Karr

The present invention provides a novel apparatus and method for managing mobile agents wherein agent servers maintain the history of movements of mobile agents at their locations as well as a count of the accumulated total number of movements by each of the mobile servers for which the agent servers have a history. In addition, the agent servers generate requests for updating registration server locations and periodically communicate the requests to the registration server, wherein the requests include the history of movements with the accumulated counts. At the registration server, tables are updated for any given mobile

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agent using only the information that is accompanied by the highest count of accumulated movements, thereby avoiding updating with stale information.

The Examiner has cited the Kase patent as teaching a mobile agent management apparatus that maintains location information of mobile agents, citing Col. 19, lines 5-62. The Kase patent is directed to an agent system, defined by Kase as "one that performs processing such as information collections while moving on nodes configuring the network" (see: Col. 1, lines 22-24). Due to reliability concerns within a network, whereby "an area conceiving an evil intention may falsify the agent coming thereto and equip it with a harmful function such as a computer virus, and may substitute the agent for a harmful agent" (Col. 19, lines 31-34), the Kase patent sequentially records the area to which an agent moves in a history which is stored in a reliability list storing section (Col. 19, lines 8-11). Then each area decides whether to accept an agent based on the history of areas where the agent has been and the reliability of those listed areas (Col. 19, lines 11-14). The Kase patent does not teach the claimed steps and means for each of a plurality of agent servers to maintain a history of movements including a counter for accumulating a

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count of the accumulated number of movements for each mobile agent. While Kase saves location information in the mobile agent's history, Kase does not teach or suggest the maintenance and use of a counter for accumulating a count of the accumulated number of movements for each mobile agent. Further, the Kase nodes do not keep histories/location information. The nodes only keep a list of reliable areas. Accordingly, Appellants believe that the Examiner erred in interpreting the teachings of Kase.

As acknowledged by the Examiner, the Kase patent does not teach the claimed request means or steps for requesting location update information. The Examiner has cited the Karr patent publication Abstract stating that Karr "teaches the requesting of location information in a mobile agent." What the Karr Abstract states is that the system "uses a plurality of MS locating technologies, including those based on (1) two-way TOA and TDOA (*which represented "time-of-arrival" and "time-differential-of-arrival"*); (1) pattern recognition; (3) distributed antenna provisioning; and (4) supplemental information from various types of very low cost non-infrastructure base stations". Karr does not teach requesting location information or location update information. Rather, Karr focuses on obtaining location

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information using signal fingerprinting and other technologies that do not rely on an express request for information from a registration server.

The Examiner has concluded that Karr's "outputting requested locations" of handsets and mobile agents from the Karr Abstract teaches "requesting location information". However, what Karr is teaching is that the server finds mobile devices in response to outside query requests and then outputs the requested location information to the requesting entity, not that the server requests location information from mobile devices. As noted above, Karr expressly teaches that the system "uses a plurality of MS locating technologies, including those based on (1) two-way TOA and TDOA; (1) pattern recognition; (3) distributed antenna provisioning; and (4) supplemental information from various types of very low cost non-infrastructure base stations" to locate mobile stations. Karr does not teach agent servers or a registration server requesting location information or location update information from mobile devices. Rather, Karr focuses on obtaining location information using signal fingerprinting and other technologies that do not rely on an express request for information from a registration server. Appellants believe

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that the Examiner erred in interpreting the teachings of Karr.

Even if one did modify Kase with Karr, one would not arrive at the claimed invention since Karr teaches methods of locating devices without express requests for location information and neither reference teaches maintaining the count of accumulated movements of devices.

The Examiner has further concluded that counting is well known; however, there is no teaching or motivation found in the references to include a counter for counting the number of accumulated movements for each mobile agent.

Appellants conclude that the combination of teachings does not obviate the invention as claimed in Claims 1 and 6. To establish a *prima facie* case of obviousness, the prior art must teach or suggest all of the claim limitations. "All words in a claim must be considered in judging the patentability of that claim against the prior art" (In re Wilson, 424 F. 2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970)). If the cited references fail to teach each and every one of the claim limitations, a *prima facie* case of obviousness has not been established by the Examiner. Since neither Kase nor Karr teaches means or steps for maintaining a history of movements which includes a counter

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for accumulating a count of the accumulated number of movements for each mobile agent, and since neither reference teaches steps or means for periodically generating requests for updating location information, it cannot be maintained that the combination of references obviates the invention as claimed.

It is well established under U.S. Patent Law that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art (*In re Fine*, 837 F. 2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F. 2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)). Appellants respectfully assert that there are no teachings, suggestions, or motivations provide by either the Kase or Karr references to motivate one skilled in the art to combine teachings therefrom. Moreover, Appellants respectfully contend that any combination of teachings from the two references would not result in the invention as claimed.

For a determination of obviousness, the prior art must teach or suggest all of the claim limitations. "All words

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in a claim must be considered in judging the patentability of that claim against the prior art" (*In re Wilson*, 424 F. 2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970)). If the cited references fail to teach each and every one of the claim limitations, a *prima facie* case of obviousness has not been established by the Examiner. Accordingly, Appellants conclude that the Examiner has not established a *prima facie* case of obviousness against the language of Claims 1 and 6.

Claims 3-5 and 8-9

With regard to Claims 3-4 and 8-9, the Examiner has cited the Ho patent teachings in combination with the Kase and Karr teachings. Appellants rely on the arguments presented above with respect to the Kase and Karr teachings. The Ho patent is cited for teachings a "movement threshold measurement" (Col. 5, lines 53-Col. 6, line 49). The Ho patent system tracks the movements of a mobile station to determine where the mobile station is in relation to places it can call (its paging area). Ho provides a movement counter MC for a mobile station; however, the MC does not record an absolute count of accumulated movements. For example, since a mobile station may perform so-called

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"loops", some of the movement path will actually be removed from the reporting (see: Col. 5, lines 21-41). Movement is tracked relative to cell locations/boundaries in the network and is not an accumulated count. Ho uses an "adaptive" movement counter and dynamic movement thresholds to track where the mobile station is, relative to other location, while it is moving. As expressly taught by Ho in Col. 6, at lines 31-34, the "values of movement counter MC and call counter CC at mobile station 300 are reset every time a location update is performed" and the system may "return a new movement threshold" (Col. 6, lines 12-14). Accordingly, Appellants contend that the Ho patent does not teach or suggest a counter for maintaining an accumulated number of movements, since Ho changes the count based on loops, etc. Further, Ho does not teach or suggest comparing the count to a predetermined threshold (Claims 3 and 8), since Ho changes the movement threshold. Finally, Ho does not teach or suggest generating a request for updating location information based on a comparison to a predetermined threshold or renewing location information based on updates (Claims 4, 5 and 9). Accordingly, Appellants again conclude that a *prima facie* case of obviousness has not been established.

CONCLUSION

Appellants respectfully assert that the Examiner has erred in rejecting Claims 1, 3-6, and 8-9. Appellants request that the decisions of the Examiner be overturned by the Board and that the claims be passed to issuance.

Respectfully submitted,

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APPENDIX OF CLAIMS

1. A mobile agent management apparatus comprising:
a plurality of agent servers; and
a registration server for maintaining location information
of mobile agents,
wherein each of said plurality of agent servers comprises:
means for maintaining a history of movement of each of said
mobile agents including a counter for accumulating a count
of the accumulated number of movements for each of said
mobile agents; and
request means for periodically generating requests for
updating location information of each of said agents, said
requests including at least a mobile agent identifier and
said accumulated number of movements for said mobile agent,
to renew location information at said registration server.

2. (canceled)

3. The apparatus of Claim 1 wherein each of said agent
servers further comprises comparator means for comparing the
count in said counter with a predetermined threshold.

4. The apparatus of Claim 1 wherein the request generator of each of said agent servers generates a request to said registration server for updating location information when the count of the accumulated number of movements of a corresponding mobile agent exceeds a predetermined threshold.

5. The apparatus of Claim 4 wherein said registration server comprises at least one register for maintaining accumulated number of movements and locations of each of said mobile agents in an associated manner and renews said location information of each of said mobile agents only upon receipt of requests for updating location information associated with a higher accumulated number of movements.

6. A method for managing locations of mobile agents by using a plurality of agent servers and a registration server for maintaining locations of mobile agents comprising the steps of:

on each of said agent servers;

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maintaining history of movement of each of said mobile agents including accumulating a count of the number of movements for each of said mobile agents; and periodically generating requests for updating and deleting registries, said requests including at least a mobile agent identifier and said count of the accumulated number of movements for said mobile agent; and at said registration server, renewing location information of each of said mobile agents kept by said registration server with said requests.

7. (canceled)

8. The method of Claim 6 further comprising comparing said count of the accumulated number of movements to a threshold number of movements.

9. The method of Claim 8 wherein said generating is done when said count of the accumulated number of movements exceeds said threshold number of movements.

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EVIDENCE APPENDIX

There is no additional evidence submitted herewith.

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RELATED PROCEEDINGS APPENDIX

There are no related proceedings.